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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/606,024	06/25/2003	R. Victor Klassen	D/A2218I1	3942

62095 7590 11/12/2009

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EXAMINER	
ROBINSON, MYLES D	
ART UNIT	**PAPER NUMBER**
2625	
MAIL DATE	**DELIVERY MODE**
11/12/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/606,024	KLASSEN ET AL.	
	Examiner	Art Unit	
	Myles D. Robinson	2625	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *16 July 2009*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1 - 20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1 - 20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *16 July 2009* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. Applicant's amendment was received on 7/16/2009, and has been entered and made of record. Currently, **claims 1 – 20** are pending.

Response to Arguments

2. Applicant's arguments (*see Remarks 7/16/2009*) with respect to the rejection(s) of **claims 1 and 2** under 35 U.S.C. §103(a) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground of rejection is made in view of **Yomogizawa** (Japanese Patent No. 09-050354).

Regarding **claim 1**, the Applicant argues that **Christiansen *et al.*** (U.S. Patent Application Publication No. 2004/0114170) in view of **Matsunoshita** (U.S. Patent No. 5,835,691) and further in view of **Ohara** (U.S. Patent Application Publication No. 2003/0184800) does not disclose, teach or suggest a virtual disk remote transfer system (VDISK) being implemented by providing a shared memory interface (*see Remarks 7/16/2009 [pages 9 – 10]*).

However, Yomogizawa does disclose a virtual disk remote transfer system (VDISK) being implemented by providing a shared memory interface (*see Abstract*).

3. Regarding **claim 2**, the Applicant argues that Christiansen in view of Matsunoshita and further in view of Ohara does not disclose, teach or suggest

preventing selected chunks from being added to VDISK when the monitored available space indicates a memory overflow (*see Remarks 7/16/2009 [page 10]*).

However, Yomogizawa does disclose preventing selected chunks from being added to VDISK when the monitored available space indicates a memory overflow (*see Abstract*).

Therefore, the Applicant's arguments regarding **claims 1 and 2** are considered not persuasive. Please cite rationale of the grounds of rejection below for further explanation.

4. Regarding **claim 4**, Applicant's arguments (*see Remarks 7/16/2006 [page 11]*) have been fully considered but they are not persuasive.

In response to applicant's argument that the examiner has combined an excessive number of references, reliance on a large number of references in a rejection does not, without more, weigh against the obviousness of the claimed invention. See *In re Gorman*, 933 F.2d 982, 18 USPQ2d 1885 (Fed. Cir. 1991).

Applicant's arguments do not comply with 37 CFR 1.111(c) because they do not clearly point out the patentable novelty which he or she thinks the claims present in view of the state of the art disclosed by the references cited or the objections made. Further, they do not show how the amendments avoid such references or objections.

Therefore, the Applicant's arguments regarding **claim 4** is considered not persuasive. Please cite rationale of the grounds of rejection below for further explanation.

Drawings

5. The drawings were received on 7/16/2009. These drawings are acceptable.

Specification

6. The amendments to the specification were received on 7/16/2009. These amendments are acceptable.

Claim Objections

7. The following quotation of 37 CFR 1.75(a) is the basis of the objection:

> (a) The specification must conclude with a claim particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention or discovery.

8. ***Claims 5 – 10*** are objected to under 37 CFR 1.75(a) as failing to particularly point out and distinctly claim the subject matter which the applicant regards as his invention or discovery.

Claims 5 – 10 recites the limitation "a job" in lines 2 of these claims after the limitation "a print job" was claimed in line 2 of their parent claim 1. The applicant has failed to particularly point out and distinctly claim if the applicant is referring to ***the same, instant*** "job" or ***a unique and distinctly different*** "job" within the claim.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

9. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

10. ***Claims 13, 15 and 20*** are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 13 recites the limitation "the print devices" in line 2. There is insufficient antecedent basis for this limitation in the claim. Although the final step of printing the print job must inherently include at least one print device as recited in the parent claim 1, there is insufficient antecedent basis regarding the number of print devices. In other words, it is unclear whether the scope of the claims includes two or more print devices or at least one print device.

11. **Claim 15** recites the limitation "the user selected status" in line 2. There is insufficient antecedent basis for this limitation in the claim.

12. **Claim 20** recites the limitation "the supervisor" in line 6. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

13. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

14. ***Claim 20*** is rejected under 35 U.S.C. 102(e) as being anticipated by **Christiansen *et al.*** (U.S. Patent Application Publication No. 2004/0114170).

Referring to **claim 20**, Christiansen discloses a method of operating a printing system for parallel processing job (*see Fig. 1 wherein raster image processing (RIP) system 100 processes print job 103 in parallel [paragraphs 0020 – 0021 and 0035]*) comprising the steps of:

inputting a print job (*see Figs. 2 and 14 wherein print job preprocessor 173 awaits input of print job 103 in step 503 [paragraphs 0062 – 0063]*),

storing the print job in a spooling system (*see Figs. 2 and 14 wherein print job 103 is stored in a queue or other portion of memory 146 in step 506 [paragraphs 0028 – 0029, 0034 – 0035 and 0063]*),

determining the language, size and location of the print job (*see Figs. 1, 9 and 14 wherein print job preprocessor 173 determines which pipeline 113 to which the print job 103 is to be applied [i.e. location of the print job] based upon the priorities assigned to each of the existing pipelines 113 as well as the pipeline acceptance criteria 299 [paragraph 0064] and see Fig. 9 wherein pipeline acceptance criteria 299 for a respective pipeline 113 include specifying a specific page description language for the print job that will be accepted [i.e. language of print job] and specifying a range of file sizes for acceptable print jobs [paragraphs 0041 – 0042]*),

advising the supervisor to select splitter (*see Fig. 9 wherein a user provides pipeline acceptance criteria 299 for a respective pipeline 113 such that the criteria 299 is analogous advisement to RIP manager 106 [i.e. supervisor] [paragraphs 0041 – 0042] and see Figs. 15A – 15B wherein the system determines partitions of the print job based upon criteria 299 [i.e. predetermined factors] [paragraphs 0067 – 0071]*),

splitter advised of job location and chunk parameters (*see Figs. 9 and 14 wherein print job preprocessor 173 uses pipeline acceptance criteria 299, which are equivalent to advisement of chunk parameters, to advise partition manger 176 [i.e. splitter] in determining which pipeline 113 to which the print job is to be applied [i.e. job location] in step 519 [paragraphs 0041 – 0042 and 0064]*),

assigning chunk to rasterized image processor (RIP) nodes (*see Figs. 2 and 14 wherein print job preprocessor 173 determines which pipeline 133, which comprises RIP engines 109, to which the print job 103 is to be applied in step 519 and then transfers the print job to partition manager 176 [paragraph 0064] and see Figs. 2 and 15B wherein then partition manager 176 applies partition to the pipeline 113 for RIPping in step 633 [paragraph 0073]*),

splitting the job into chunks (*see Fig. 2, partition manager 176 and see Fig. 14, steps 519 – 523 [paragraphs 0064 – 0065]*),

sending chunks to RIP node (*see Figs. 1, 2 and 15B wherein then partition manager 176 applies partition to the pipeline 113 for RIPping in step 633 [paragraphs 0021 and 0073]*),

maintain chunk order by collector (*see Figs. 1 and 16 wherein RIP manager 106 re-aggregates the RIPped partitions 119 into a single RIPped output file 123 in step 709 [paragraphs 0026 and 0083]*),

advising supervisor of chunk completion by splitter (*see Figs. 1, 2 and 16 wherein RIP manager 106 tracks a status 189 of the RIPping of each of the partitions*

based upon the partition specification in steps 673, 693, 706, 713 [paragraphs 0021, 0076 – 0077, 0079 and 0082 – 0083]),

advising collector of page to chunk association (*see Figs. 1, 2 and 16 wherein RIP manager 106 comprising RIP handler 179 re-aggregates the RIPped partitions 119 into a single RIPped output file 123 in step 709 [paragraphs 0026 and 0083]*),

parallel processing of chunks by RIP nodes (*see Fig. 1 wherein raster image processing (RIP) system 100 processes print job 103 in parallel [paragraphs 0020 – 0021 and 0035] and see Figs. 1 and 2 wherein RIP engines 109 rip print job 103 into a printer ready format for RIPped output file 123 for output to print device 126 [paragraphs 0021 – 0022 and 0025 – 0026]*),

advising supervisor and collector that chunk processing completed (*see Figs. 1, 2, 16 and 17 wherein RIP engine(s) 109 report RIPping is complete to RIP manager 106 [i.e. supervisor] in step 756 [paragraph 0086] and wherein RIP handler 179 [i.e. collector] determines whether all partitions associated with a given print job 103 have been RIPped in step 703 [paragraph 0082]*),

sending rasterized chunks to memory (*see Figs. 1, 2 and 16 wherein RIP manager 106 uploads rasterized partition 119 and stores it in memory that is local to the RIP manager 106 in step 686 [paragraphs 0024 and 0079]*),

completing print job by splitter (*see Figs. 1, 2 and 16 wherein RIP handler 179 applies RIPped output file 123 to a print device 126 or a print queue for printing in step 716 to complete the partitioned print job [paragraph 0083]*), and

advising supervisor of end-of-job by collector (*see Figs. 1, 2 and 16 wherein RIP handler 179 indicates to RIP manager 106 that print job 103 has been re-aggregated by updating the partition specification in step 713 [paragraphs 0026 and 0083]*).

Claim Rejections - 35 USC § 103

15. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

16. ***Claims 1 – 3, 6, 11 and 13 – 17*** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Christiansen *et al.*** (U.S. Patent Application Publication No. 2004/0114170) in view of **Yomogizawa** (Japanese Patent No. 09-050354).

Referring to **claim 1**, Christiansen discloses a method of operating a printing system for parallel processing a print job (*see Fig. 1 wherein raster image processing (RIP) system 100 processes print job 103 in parallel [paragraphs 0020 – 0021 and 0035]*) with a plurality of processing nodes into a printer ready format for printing the print job (*see Figs. 1 and 2 wherein RIP engines 109 rip print job 103 into a printer ready format for RIPped output file 123 for output to print device 126 [paragraphs 0021 – 0022 and 0025 – 0026]*), said processing nodes communicating with a disk transfer system (*see Fig. 2, memory 146 [paragraphs 0034 and 0091]*), comprising:

splitting the print job into a plurality of job chunks (*see Fig. 2, partition manager 176 and see Fig. 14, steps 519 – 523 [paragraphs 0064 – 0065]*), wherein the chunks range in size from at least one page to the entire size of the print job (*paragraphs 0021 and 0023 wherein the partitions of print job 103, which are analogous to the plurality of*

job chunks of the print job, are defined as a subset of the total number of pages in a print job that may be consecutive or nonconsecutive), wherein pages comprising the chunks are selected in accordance with predetermined selection factors for optimizing page printing processing efficiency (*see Fig. 9 wherein a user provides pipeline acceptance criteria 299 for a respective pipeline 113 such that the criteria 299 is analogous to predetermined factors [paragraphs 0041 – 0042], see Figs. 15A – 15B wherein the system determines partitions of the print job based upon criteria 299 [i.e. predetermined factors] [paragraphs 0067 – 0071] and see Figs. 1 and 16 wherein the RIPped output file 123 is then applied to a print device 126 for printing in box 716 [paragraphs 0026 and 0083]*),

selectively storing the job chunks and print-ready pages in the disk transfer system wherein the transfer system data comprises an intermediary storage for data transfer to selected processing nodes (*see Figs. 1, 2 and 14 wherein partitions are queued up within memory 146 to wait until at least one RIP engine 109 to which the partition is assigned becomes available in step 506 [paragraphs 0022 and 0063]*) including a RAM and physical disk (*see Fig. 2 wherein memory 146 comprises RAM and physical disks [e.g. hard disk drives, floppy drives, compact discs, magnetic tape drives, etc.] [paragraphs 0034 and 0091]*),

assigning the job chunks to respective processing nodes for processing the job chunks into the printer-ready format (*see Figs. 2 and 14 wherein print job preprocessor 173 determines which pipeline 133, which comprises RIP engines 109, to which the print job 103 is to be applied in step 519 and then transfers the print job to partition*

manager 176 [paragraph 0064] and see Figs. 2 and 15B wherein then partition manager 176 applies partition to the pipeline 113 for RIPping in step 633 [paragraph 0073]), and

printing the print job (*see Figs. 1 and 16 wherein the RIPped output file 123 is then applied to a print device 126 for printing in box 716 [paragraphs 0026 and 0083]*) but does not explicitly disclose the method further wherein said processing nodes communicate with a virtual disk remote transfer system implemented by providing a shared memory interface, comprising monitoring available space in the virtual disk transfer system including detecting a data overflow in the RAM and storing new data in the physical disk until data storage in the RAM is available.

Yomogizawa discloses the method wherein said processing nodes communicate with a virtual disk remote transfer system implemented by providing a shared memory interface (*see Abstract wherein a first printer [i.e. a processing node] virtually stores a print job in the spool of the second remote printer [i.e. another node] via a network such that print data sent to the printers can be spooled as long as one of the printers has a space area in the network [i.e. shared memory among a plurality of processing nodes]*), comprising:

monitoring available space in the virtual disk transfer system (*see Abstract wherein the first printer monitors whether a space area is secured in its own spool in accordance with print progress*) including detecting a data overflow in the RAM (*see Abstract wherein a first printer virtually stores a print job in the spool of the second remote printer via a network whenever the first printer is unable to store all of the received print data in it spool of the first printer*) and storing new data in the physical

disk until data storage in the RAM is available (*see Abstract wherein the first printer calls back the print data which was virtually spooled in the second remote printer via the network whenever the necessary space area is secured in the first printer's spool [i.e. storing new data until data storage is available] and wherein spooling inherently teaches read/write operations between the RAM and physical disk*).

Christiansen and Yomogizawa are combinable because they are from the same field of endeavor, being job management system within a network of printers. At the time of the invention, it would have been obvious to one of ordinary skill in the art to include monitoring the available space for virtual spooling within a print job management system. The suggestion/motivation for doing so would have been to provide a spool device for the received print data so long as one of the remote printers in the network has space whenever there becomes limited space in one local printer's spooler, as suggested by Yomogizawa (*see Abstract*). See MPEP §2143 G.

Referring to **claim 2**, Yomogizawa discloses the method further comprising the step of preventing selected chunks from being added to the virtual disk transfer system when the monitored available space falls below a predetermined threshold representative of the overflow (*see Abstract wherein first printer only calls back the print which has been virtually spooled when a necessary space area is secured [i.e. the monitored available space falls below a predetermined threshold representative of the overflow] such that the received print data is virtually spooled in a remote printer whenever that received print cannot be received in the spool of the first printer [i.e. preventing selected chunks from being added]*).

Referring to **claim 3**, Christiansen discloses the method further wherein the splitting step is preformed by a splitter (*see Figs. 2 and 15A – 15B, partition manager 176 [paragraphs 0064 – 0065]*) and further comprising the step of withholding chunk destinations from the splitter (*see Figs. 2 and 16 wherein RIP handler 179 receives the partitioned print job [i.e. plurality of job chunks] and assigns those partitions to RIP engines 209 for processing in such a manner that RIP handler 179, which determines the chunk destinations [i.e. pipeline 113 comprising RIP engines 109], functions properly without revealing to partition manager 176, which splits the print job into chunks, which one(s) of RIP engines 109 the partitions will be assigned [i.e. withholding chunk destinations from the splitter] [paragraphs 0074 – 0083]*).

Referring to **claim 5**, Christiansen discloses the method further wherein the predetermined factors used to determine the size of a job further includes the total number of pages within the print job (*see Figs. 1 and 14 wherein RIP manager 106 first determines a page count of the total number of pages of print job 103 and then determines a number of partitions [i.e. chunks] for the print job 103 assuming the page count can be determined in steps 509, 516, 519 and 523 [paragraph 0021]*).

Referring to **claim 6**, Christiansen discloses the method further wherein the predetermined factors used to determine the size of a job further includes the total number of bits within the print job (*see Fig. 9 wherein a user provides pipeline acceptance criteria 299 for a respective pipeline 113 such that the criteria 299 is analogous to predetermined factors [paragraphs 0041 – 0042] and wherein one acceptance criteria 299 includes "all jobs with a file size between" such that file size is*

the equivalent to the total number of bits within the print job [see Fig. 9] and see Figs. 15A – 15B wherein the system determines partitions of the print job based upon criteria 299 [i.e. predetermined factors] [paragraphs 0067 – 0071] and see Figs. 1 and 16 wherein the RIPped output file 123 is then applied to a print device 126 for printing in box 716 [paragraphs 0026 and 0083]).

Furthermore, Christiansen discloses the method further wherein the predetermined factors used to determine the size of a job further includes the total number of pages within the print job (*see Figs. 1 and 14 wherein RIP manager 106 first determines a page count of the total number of pages of print job 103 and then determines a number of partitions [i.e. chunks] for the print job 103 assuming the page count can be determined in steps 509, 516, 519 and 523 [paragraph 0021]*). One of ordinary skill in art would recognize that the pages of the print job are inherently stored as bits of data. In other words, the total number of pages within the print job is inherently represented as a certain number of bits for that print job.

Referring to **claim 11**, Christiansen discloses the method further wherein separate print queues are used (*see Figs. 1, 2 and 15B wherein partition manager 176 applies the print job 103 to a pipeline 113 such that the print job is placed into a queue associated with the respective pipeline 113, etc. or an alternative general queue for all print jobs in step 633 [paragraph 0073]*). Claim scope is not limited by claim language that suggests or makes optional but does not require steps to be performed, or by claim language that does not limit a claim to a particular structure. Specifically, the claim

language "may be defined" suggests optional functionality or utility. See MPEP §2111.04, §2143 G, §2144.04 I.

Referring to **claim 13**, Christiansen discloses the method further wherein the parallel processing system incorporates load balancing to spread the workload out evenly among the print devices (*see Fig. 1 wherein RIP manager 106 assigns partitions to one or more RIP engines 109 for raster image processing [paragraphs 0022 and 0025]*).

Referring to **claim 14**, Christiansen discloses the method further wherein the parallel processing system incorporates auto discovery to evaluate the availability of hardware resources (*see Fig. 15A, step 556 [paragraph 0066]*).

Referring to **claim 15**, Christiansen discloses the method further wherein the splitting functionality may have the user selected status associated with each partition (*see Fig. 2 wherein RIP manager 106 tracks the status [e.g. unassigned, assigned, completed, or their equivalents] of the RIPping of each of the partitions 189 [paragraphs 0021, 0022, 0024 and 0031] and see Figs. 5 – 6 wherein user interface 196a allows the user to manipulate these statuses by reassigning particular partitions to another pipeline 113 [paragraphs 0036 – 0038]*).

However, Christiansen does not explicitly disclose the method further wherein the statuses have the specific names maximum, recommended and allocated.

The Examiner asserts that these are mere design changes. At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to modify the names of the statuses associated with each partition during parallel

processing. Applicant has not disclosed how these particular status names provide an advantage, is used for a particular purpose, or solves a stated problem. One of ordinary skill in the art, furthermore, would have expected Applicant's invention to perform equally well with using the status names taught in Christiansen or their equivalents because the status names "maximum," "recommended" and "allocated" could be applied to some other aspect of splitting functionality under the broadest reasonable interpretation.

For example, the status "allocated" could be equivalent to the status "assigned" which represents that the allocated partition has already been assigned for ripping, the status "recommended" could be equivalent to the status "unassigned" which represents that this unassigned partition is one recommended next for ripping, and the status "maximum" could be equivalent to the status "completed" which represents that the maximum amount of the partition has been completely rendered. Claim scope is not limited by claim language that suggests or makes optional but does not require steps to be performed, or by claim language that does not limit a claim to a particular structure. Specifically, the claim language "may have" suggests optional functionality or utility. See MPEP §2111.04, §2143 G, §2144.04 I.

Therefore, it would have been obvious to one of ordinary skill in this art to modify the names of the statuses taught by Christiansen to obtain the invention as specified in claim 15.

Referring to **claim 16**, the rationale provided above in the rejection of claim 1 is incorporated herein. In addition, the method of claim 1 includes the elements and

limitations of the method of claim 16. Furthermore, Christiansen discloses a plurality of parallel processors (*see Fig. 1 wherein raster image processing (RIP) system 100 processes print job 103 in parallel [paragraphs 0020 – 0021 and 0035] and see Figs. 1 and 2 wherein RIP engines 109 rip print job 103 for output to print device 126 [paragraphs 0021 – 0022 and 0025 – 0026]*).

Referring to **claim 17**, Christiansen discloses the method further wherein the parallel processing comprises at least three processors (*see Figs. 1 and 3 wherein RIP manager 106 assigns partitions to one or more RIP engines 109 [paragraph 0022]*) connected to at least three separate memories (*see Fig. 3 wherein each RIP engine has its own memory 206 [paragraph 0032]*).

17. ***Claim 4*** is rejected under 35 U.S.C. 103(a) as being unpatentable over **Christiansen *et al.*** (U.S. Patent Application Publication No. 2004/0114170 in view of **Yomogizawa** (Japanese Patent No. 09-050354) and further in view of **Dimperio *et al.*** (U.S. Patent No. 5,142,667).

Referring to **claim 4**, Christiansen and Yomogizawa disclose the method as discussed above in claim 4 but does not explicitly disclose the method further including paging out the print data from the disk transfer system in a most-recently used order, wherein a least recently-used chunk is read soonest.

Dimperio discloses the method including paging out the print data from the disk transfer system in a most-recently used order, wherein a least recently-used chunk is read soonest (*see Figs. 20 – 21and 26 wherein most recent printing is best for deleting*

some image file(s, which may be pages or segments [e.g. parts of pages], from memory in order to make room for the next image file to be brought into memory [column 13, lines 19 – 33, 52 – 68, column 16, lines 30 – 40, 53 – 58, column 17, lines 3 – 30, column 18, lines 65 – 68 and column 22, lines 7 – 35]).

Matsunoshita, Yomogizawa and Dimperio are combinable because they are from the same field of endeavor, being memory management systems. At the time of the invention, it would have been obvious to one of ordinary skill in the art to include printing in most recently used order when a job is printing and memory reaches capacity. The suggestion/motivation for doing so would have been to improve memory and/or disk performance by generating the least amount of swapped segments while reducing the amount of disk reading to a minimum, as suggested by Dimperio (*column 13, lines 52 – 68, column 17, lines 20 – 28 and column 22, lines 17 – 35*). See MPEP §2143 G.

18. ***Claims 7 and 8*** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Christiansen *et al.*** (U.S. Patent Application Publication No. 2004/0114170 in view of **Yomogizawa** (Japanese Patent No. 09-050354) and further in view of **Yamazaki** (U.S. Patent No. 6,785,727).

Referring to **claims 7 and 8**, Christiansen discloses the method further wherein that other predetermined factors (*see Fig. 9, acceptance criteria 299*) may be employed and that the predetermined factors are not limited to that which is expressly described herein (*paragraph 0042*). However, neither Christiansen nor Yomogizawa explicitly disclose the method further wherein the predetermined factors used to determine the

size of a job further includes the total amount of processing required to process the job or the amount of startup time needed to set up the job.

Yamazaki discloses the method wherein the predetermined factors used to determine the size of a job further includes the total amount of processing required to process the job or the amount of startup time needed to set up the job (*see Figs. 19 and 21 wherein a user sets button 1907 to the maximum allotted processing time necessary [i.e. amount of startup time needed] for an incoming print job [column 11, lines 15 – 20] and wherein a user sets buttons 1909, 1910 to split the incoming job into smaller jobs respectively having a size within a time required for processing [column 11, lines 41 – 52 and column 12, lines 6 – 11]*).

Christiansen, Yomogizawa and Yamazaki are combinable because they are from the same field of endeavor, being job management system within a network of printers. At the time of the invention, it would have been obvious to one of ordinary skill in the art to include dividing print jobs into smaller processing times along with such print job management systems in a network. The design incentives, which would have prompted variations obvious to one of ordinary skill in the art, include optimizing the sharing of limited printer resources within a network by allowing certain manageable sized print jobs of non-reserved print jobs to be processed while preventing useless delay in processing reserved print jobs, as suggested by Yamazaki (*column 11, lines 48 – 52*). In view of the identified design incentives and the disclosed adaptability of Christiansen, one of ordinary skill could have implemented the claimed variation of the prior art, and

this variation would have been predictable to one of ordinary skill in the art. See MPEP §2143 F and G.

19. ***Claims 7 and 9*** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Christiansen *et al.*** (U.S. Patent Application Publication No. 2004/0114170 in view of **Yomogizawa** (Japanese Patent No. 09-050354) and further in view of **Wood *et al.*** (U.S. Patent Application Publication No. 2004/0243934).

Referring to **claim 7**, Christiansen discloses the method further wherein that other predetermined factors (*see Fig. 9, acceptance criteria 299*) may be employed and that the predetermined factors are not limited to that which is expressly described herein (*paragraph 0042*). However, neither Christiansen nor Yomogizawa explicitly disclose the method further wherein the predetermined factors used to determine the size of a job further includes the total amount of processing required to process the job.

Wood discloses the method wherein the predetermined factors used to determine the size of a job further includes the total amount of processing required to process the job (*see Figs. 1 and 4 wherein compound segmenting rules may include a rule which specifies that the PDL stream be divided into multi-page segments [i.e. chunks] along with another rule which specifies that graphic objects and text objects will be split out as segments in step 12 [paragraphs 0025 – 0026] and wherein scheduling process 24 assigns segments to processors based on the complexity of the segments and the processor's speed [paragraph 0036]*).

One of ordinary skill in the art could have combined the elements as claimed by known methods of Christiansen and Wood, and that in combination, each element merely performs the same function as it does separately. The suggestion/motivation for the combination of elements would have been to provide improved parallel processing of multiple segments of a PDL data stream, as suggested by Wood (*paragraphs 0003, 0008 – 0009, 0011 – 0012, 0014 and 0036*). The combination yields nothing more than predictable results to one of ordinary skill in the art. See MPEP §2143 A and G.

Referring to **claim 9**, Christiansen discloses the method further wherein that other predetermined factors (*see Fig. 9, acceptance criteria 299*) may be employed and that the predetermined factors are not limited to that which is expressly described herein (*paragraph 0042*). However, neither Christiansen nor Yomogizawa explicitly disclose the method further wherein the predetermined factors used to determine the size of a job further includes number of pages containing non-text images contained in the print job.

Wood discloses the method wherein the predetermined factors used to determine the size of a job further includes number of pages containing non-text images contained in the print job (*see Figs. 1 and 4 wherein compound segmenting rules may include a rule which specifies that the PDL stream be divided into multi-page segments [i.e. chunks] along with another rule which specifies that graphic objects and text objects will be split out as segments in step 12 [paragraphs 0025 – 0026] and wherein scheduling process 24 assigns data files associated with text segments to processors that are customized for interpreting text data while assigning data files associated with*

image segments to processors that are customized for interpreting image data [Abstract and paragraph 0034] and see Fig. 5C wherein data files associated with text segments are sent to processor 38_1 while data files associated with black and white images and color images [i.e. non-text images] are sent to processors 38_2 and 38_3, respectively [Abstract and paragraph 0035]).

One of ordinary skill in the art could have combined the elements as claimed by known methods of Christiansen and Wood, and that in combination, each element merely performs the same function as it does separately. The suggestion/motivation for the combination of elements would have been to provide improved parallel processing of multiple segments of a PDL data stream, as suggested by Wood (*paragraphs 0003, 0008 – 0009, 0011 – 0012, 0014 and 0035*). The combination yields nothing more than predictable results to one of ordinary skill in the art. See MPEP §2143 A and G.

20. ***Claim 10*** is rejected under 35 U.S.C. 103(a) as being unpatentable over **Christiansen *et al.*** (U.S. Patent Application Publication No. 2004/0114170 in view of **Yomogizawa** (Japanese Patent No. 09-050354) and further in view of **Barry *et al.*** (U.S. Patent No. 5,859,711).

Referring to **claim 10**, Christiansen discloses the method further wherein that other predetermined factors (*see Fig. 9, acceptance criteria 299*) may be employed and that the predetermined factors are not limited to that which is expressly described herein (*paragraph 0042*). However, neither Christiansen nor Yomogizawa explicitly disclose

the method further wherein the predetermined factors used to determine the size of a job further includes number of pages containing color in the print job.

Barry discloses the method wherein the predetermined factors used to determine the size of a job further includes number of pages containing color in the print job (*see Fig. 5 wherein the virtual printing system parses and routes pages of print jobs to engines that are more adapted to the particular printing operation [i.e. color vs. monochrome] associated with that particular page [column 8, line 30 – column 9, line 11, column 10, lines 1 – 19 and column 13, line 65 – column 14, line 47]*).

Christiansen, Yomogizawa and Barry are combinable because they are from the same field of endeavor, being job management system within a network of printers. At the time of the invention, it would have been obvious to one of ordinary skill in the art to include dividing print jobs based upon pages of color and pages of black and white along with such print job management systems in a network. The suggestion/motivation for doing so would have been to provide for faster and more efficient printing of color jobs versus monochrome jobs, as suggested by Barry (*column 10, lines 15 – 19*). See MPEP §2143 G.

21. ***Claim 12*** is rejected under 35 U.S.C. 103(a) as being unpatentable over **Christiansen *et al.*** (U.S. Patent Application Publication No. 2004/0114170) in view of **Yomogizawa** (Japanese Patent No. 09-050354) and further in view of **Christiansen** (U.S. Patent Application Publication 2004/0196470).

Referring to **claim 12**, Christiansen ' 170 and Yomogizawa disclose the method as discussed in claim 1 but does not explicitly disclose the method further wherein the parallel processing system records the previous predetermined selection factors and uses statistical analysis to determine the optimal size of chunks.

Christiansen '470 discloses the method wherein the parallel processing system records the previous predetermined selection factors and uses statistical analysis to determine the optimal size of chunks (*see Figs. 2 – 3 wherein RIP manager 110 partitions based statistical data 222 and statistical analysis and scheduling module 304 [Abstract, paragraphs 0025, 0030, 0032 and 0033], see Fig. 4 wherein user interface 234 displays statistics gathered by module 304 [paragraphs 0042 and 0044] and see Fig. 6, steps 602 – 608 [paragraphs 0063 – 0066]*).

Christiansen '170, Yomogizawa and Christiansen '470 are combinable because they are from the same field of endeavor, being management system within a network of printers. At the time of the invention, it would have been obvious to one of ordinary skill in the art to include using statistical analysis to determine optimal size of chunks. The suggestion/motivation for doing so would have been to more accurately predict future workload in part based upon historical workload levels, as suggested by Christiansen '470 (*paragraphs 0025 and 0030*).

22. ***Claims 18 and 19*** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Christiansen *et al.*** (U.S. Patent Application Publication No. 2004/0114170) in

view of **Yomogizawa** (Japanese Patent No. 09-050354) and further in view of **Cohen *et al.*** (U.S. Patent No. 6,356,355).

Referring to **claims 18 and 19**, Christiansen discloses parallel processing implemented using one or more processors and one or more memories (*see Fig. 2, processor(s) 143, memory 146 [paragraph 0028]*) but does not explicitly disclose the method further wherein the parallel processing is implemented either in symmetric multiprocessing wherein two or more processors can connect to a single shared main memory or in distributed multiprocessor.

Cohen discloses the method wherein the parallel processing is implemented in symmetric multiprocessing wherein two or more processors can connect to a single shared memory (*see Fig. 2 wherein data processing system 200 may be a symmetric multiprocessor system including multiple processors 202, 204 sharing local memory 206 [column 3, lines 11 – 24]*). Claim scope is not limited by claim language that suggests or makes optional but does not require steps to be performed, or by claim language that does not limit a claim to a particular structure. Specifically, the claim language "can" suggests optional functionality or utility. See MPEP §2111.04.

Furthermore, Cohen discloses the method wherein the parallel processing is implemented in distributed multiprocessor (*see Fig. 1, distributed data processing system 100 [column 2, lines 1 – 3 and 38 – 50]*).

One of ordinary skill in the art at the time of the invention could have substituted the symmetric multiprocessing system or the distributed multiprocessor taught by Cohen for the parallel processing system comprising a plurality of processors and

memories taught by Christiansen, and the results of the substitution would have been predictable. See MPEP §2143 B.

Conclusion

23. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Venekens (U.S. Patent No. 5,652,711) discloses parallel processing of page description language (e.g. PostScript) data stream wherein the translation process can be handled by several processors in parallel by properly segmenting the original data stream and inclusion of control commands while discarding superfluous control commands (*see Abstract and Fig. 1*).

24. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Myles D. Robinson whose telephone number is (571)272-5944. The examiner can normally be reached on M-F 8:30am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Twyler L. Haskins can be reached on (571) 272-7406. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Myles D. Robinson/
Examiner, Art Unit 2625
11/9/09

/Twyler L. Haskins/
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